

SCAFFOLDING
BY
STEPHENS & CARTER LTD

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THE STORY OF SCAFFOLDING

THE word "scaffold" is derived from a Norman-French word "echsfould" as applied to a temporary erection of timber. It is also generically connected with the Anglo-Saxon, "scylfa"—a shelf.

Although a platform of planks is implied, it must not be assumed that the meaning was necessarily closely connected with building. Chaucer refers to a certain parish clerk who delighted to play Herod "on a high scaffold." The word was also in common use as part of the gallows.

It is probable that the use of scaffolding for the erection of buildings does not go back to very ancient times. Among the mysteries of the Pyramids, that concerning the shifting of the immense masses of material (some of the blocks being 20 ft. long), is the most inscrutable. Even bearing in mind an almost unlimited labour force, it is difficult to understand how the stones were moved without some form of scaffolding and tackle. However, it is thought by some that as each layer was put in place, earth ramps were extended up which the fresh masonry was man-handled. Others hold the opinion that the stones were raised from course to course by timber machines constructed on the "fulcrum" principle. The idea of using the earth as a stand from which to work was mentioned in the account of the Kon-Tiki Expedition. Here reference was made to the huge statues on Easter Island (one was over 66 ft. high), which appeared to be erected by dragging the carved figures up a ramp on to rising ground and then lowering them into hollows below.

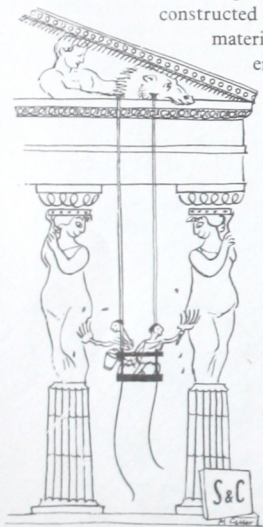
If the building methods of the ancient world are unknown, those of later classical times are little understood. The Romans employed a large variety of engines—lofty masts, capstans and levers, to lift the massive stones which they used so frequently on their important buildings. Indeed, with the break-up of their Empire, the ruins of their buildings and the loss of the scientific knowledge of how to build them, their successors must have been set something of a problem. Wishing still to build in the Roman manner and unable easily to transport the large stones, they must have been forced to use smaller ones that could be carried on a man's back and laid by hand. It may be that for this reason the heavy stone lintel became unfashionable and the arch, much used by the Romans, came into universal use. Perhaps this loss of a technique which forced the builders to use smaller units, germinated the seed which was to flower into the glories of Gothic architecture.

It is said that in buildings of classical times there are to be found traces of "putlog" holes. But on the whole, general opinion seems to be that scaffolding was not much used before mediæval times. This is understandable since it was not until then that height became a predominant factor in building. When the architects of the Gothic Cathedrals wished their towers and steeples to "aspire" into heaven in witness of their worship, they set themselves building problems which could not be solved in the old ways.



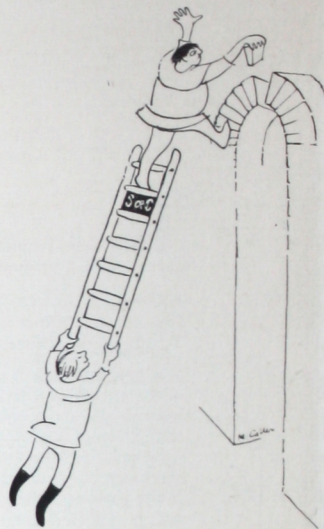
Scaffolds were undoubtedly used in mediæval buildings for anything higher than a breast-high wall. They might not have been much more than platforms resembling substantial trestle tables. For instance, there is a record of an "alta catasta" of wood made for the masons to stand on while they made holes for hooks in the pillars at St. Paul's in 1490, and also "trestals for scafullyng" at Kirby Muxloe in 1481. Nor were scaffolds necessarily standing on the ground, for there is evidence that light timber frames were built up step by step to hang in spirals round a tower as it was erected and such is the practice of steeplejacks to-day. Standing scaffolds would be used for the lower parts of buildings, but when it came to the spire, "flying" or "suspended" scaffolding would be used. Sometimes putlogs would be inserted through a wall, and working platforms constructed on either side acted as balanced cantilevers and thus obviated the use of poles.

The use of ramps still persisted as simple means of access to and from building work, and they were constructed to run diagonally from stage to stage, being wide enough to take barrow-loads of materials. The floors of each "lift" were not planked as to-day, but hurdles were employed and various timbers were used for uprights, alder being the most popular.



Coming to the days when constructional methods are better documented, we find that builders would call on the architects to design the scaffolds where the building was out of the ordinary. Thus there are still extant the scaffolding drawings which Sir Christopher Wren designed for the Monument and, beautiful as they are, the finished carpentry must have been still finer. Indeed, it is easy to-day to forget the skill and craftsmanship that went into the jointing and fixing of the old scaffolds. Although steel tube and fittings did not come into general use before the 1920's, the wooden poles and intricately knotted hemp lashings seem already to be odd survivals in the present Steel Age.

Stephens & Carter cannot claim to go back to mediæval times, but they are centenarians who have known the old ways and yet have played their part in the rapid progress of the industry in modern times. The business was started in 1850 by James Stephens, carpenter, from his home in Pentonville Road, London, and on his death the family continued it, later removing to Paddington Green. At first the concern made ladders, barrows, steps, trestles and similar articles, as it still does at its factory at High Wycombe, but later on the hiring and erecting of pole scaffolds was added. So, from quite small beginnings has grown the large scaffolding business of to-day, able to supply and erect many thousands of miles of steel scaffolding in London and the Provinces, and sending its builders' equipment to all parts of the world.



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TYPES OF SCAFFOLDING

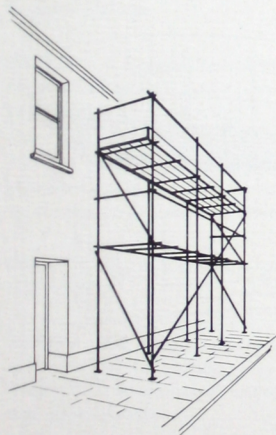
INDEPENDENT SCAFFOLDS. These have two rows of standards with ledgers connecting and supporting the putlogs or transoms so that no load is carried by the building. Used mainly on existing buildings for repairs, decorations, etc., and for Mason's scaffolds on new stone faced buildings. Standards should be spaced to suit the work involved and for general guidance the following is usual:—

for Painters, Plasterers, etc.,	9 ft. — 10 ft. centres
for Bricklayers	7 ft. — 8 ft. „
for Stonemasons	5 ft. — 6 ft. „

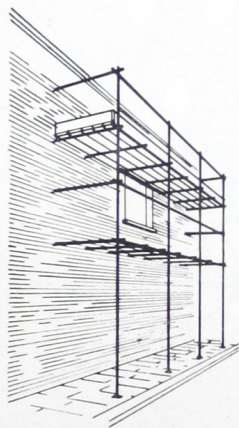
Normal distance between each platform or lift is 6 ft. Putlogs are usually spaced 2 ft. to 3 ft. apart.

PUTLOG SCAFFOLDS. Used mainly for new brickwork these have one row of standards joined by ledgers which support one end of the putlog, the other being inserted in joints of brickwork. Distance between each working platform is 4 ft. 6 ins. to 5 ft. Standards are usually at 8 ft. centres. Putlogs are spaced as in independent scaffolds.

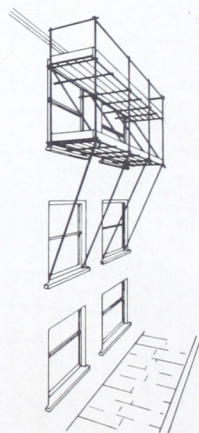
CANTILEVER OR TRUSSED SCAFFOLDS. These are generally one lift scaffolds although in some instances several lifts may be erected in this form. Construction is by cantilevering tubes out of window openings, such tubes being suitably restrained inside the building. Raking struts support the outside ledger from a sill or projection below.



INDEPENDENT
SCAFFOLD



PUTLOG SCAFFOLD

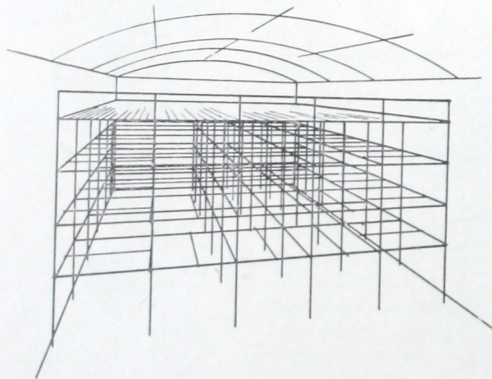


CANTILEVER OR
TRUSSED SCAFFOLD

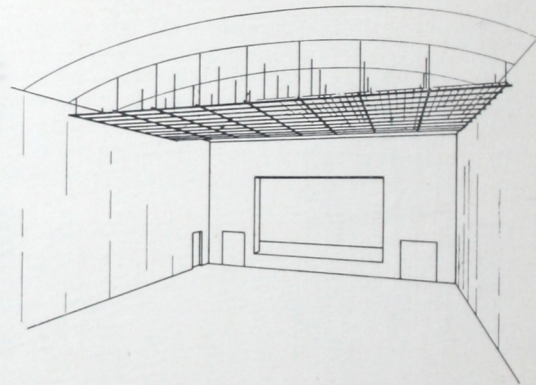
TYPES OF SCAFFOLDING (continued)

BIRDCAGE SCAFFOLDS. These are chiefly interior scaffolds for use of Painters, Plasterers, etc., for working below ceilings of large halls, churches, etc., and have standards spaced approximately equally in both width and length. The top lift is sheeted over with scaffold boards, and where the building is high, provision is made at lower lifts to support a three board working platform to the walls. Lifts are spaced at 6 ft. centres with putlogs up to 5 ft. apart. The top platform usually finishes 6 ft. from ceiling. Standards should not be spaced more than 10 ft. apart in each direction—if Alloy Tube is used this should be reduced to 8 ft. to reduce deflection of ledgers. This type of scaffold is also used to support shuttering for concrete roofs, etc., in new buildings, and these are specially designed to suit the load to be imposed.

SLUNG SCAFFOLDS. These scaffolds are hung on wire bonds from the underside of roofs of large buildings, such as Railway Stations, Theatres, Cinemas, etc., where it is impracticable to scaffold from ground level. The wires and ledgers are spaced about 10 ft. apart and transoms 4 ft. apart. The whole is then covered with scaffold boards to form a large working platform.



BIRDCAGE SCAFFOLD



SLUNG SCAFFOLD

STANDARD. A vertical member supporting load from ledgers.

PUNCEON. A horizontal member acting as a standard to the ground.

LEDGER. A horizontal member to which transoms are attached.

PUTLOG. A vertical member to wall, or a platform, spaced at suitable intervals.

TRANSOM. A horizontal member at right angles to the ledgers, but normally of the same length as the ledgers in birdcage scaffolds.

BRIDLE. A horizontal member supporting intermediate ledgers and acting as an intermediate standard.

REVEAL TIE. A horizontal member of windows or doors, attached to the ledgers.

BRACE. A diagonal member to give stability.

RAKER. An inclined member in a suitable recess on a wall, or a ledge of a trussed roof, to have ground support.

For formal definition should be made to B.S. 1139.

TUBE DEFINITIONS

STANDARD. Vertical tube support or column transmitting load from ledger and transom to ground.

PUNCHEON. A vertical tube coupling ledgers together and acting as a standard or column but not supported on baseplate or ground.

LEDGER. Horizontal tube joining two or more standards and to which transoms or putlogs are connected.

PUTLOG. A tube with spearpoint and spanning from ledger to wall, or a plain ended tube spanning from ledger to ledger, spaced at suitable centres to support scaffold boards.

TRANSOM. A tube spanning from ledger to ledger and at right angles to them, performing a similar function to a putlog but normally of greater length and longer span—chiefly used in birdcage scaffolds.

BRIDLE. A horizontal tube hung below putlogs on wall face to support intermediate putlogs across window and door openings, and acting as an inside ledger.

REVEAL TIE. A short tube packed or wedged between reveals of windows or door openings and to which putlogs or transoms are attached to tie scaffold to a building.

BRACE. Tube attached diagonally to scaffold to give increased stability.

RAKER. An inclined tube with bearing on ground or from suitable recess on building face, usually for support of outer ledger of a trussed or cantilever scaffold where standards do not have ground support.

For formal definition of all component parts of a Scaffold, reference should be made to B.S. 1139-1951.

Guard Rail (omitted on other lifts)

Return Guard Rail

Spear Point Putlog

Bridle

Standard

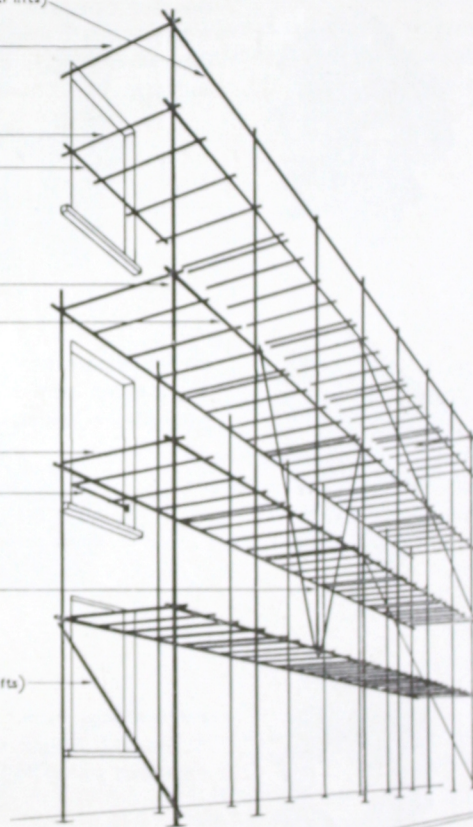
Ledger

Transom

Reveal Tie

Punchon

Brace (repeated on other lifts)



DEFINITIONS OF SCAFFOLD FITTINGS



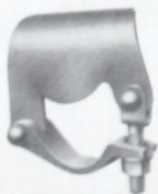
DOUBLE COUPLER.

A load bearing coupler to connect tubes at right angles, i.e., standard and ledger.



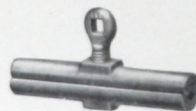
SWIVEL COUPLER.

For coupling tubes at any angle, particularly in bracing.



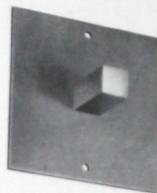
PUTLOG COUPLER.

A non-load bearing coupler for connecting putlogs to ledgers.



JOINT PIN OR EXPANDING SPIGOT.

An internal expanding fitting used to join tubes end to end. (These should not be used where the joint is subject to bending stresses or axial tensions).



BASEPLATE (PLAIN).

A flat plate with a centre peg on which standards are erected.



BASEPLATE (ADJUSTABLE).

A similar plate but with a screw-jack stem capable of adjustment.



GUARD BOARD CLIP.

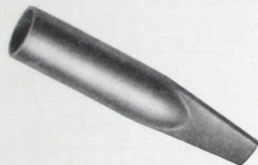
A clip designed to hold scaffold boards to tubes either vertically or horizontally.

DEFINITIONS OF SCAFFOLD FITTINGS



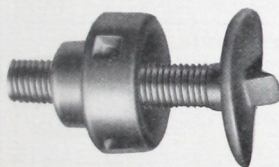
PUTLOG HEAD.

A blade fitting for attaching to plain ended tube to form spearpoint putlogs.



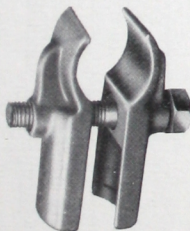
SPEARPOINT PUTLOG.

A 5ft. or 6ft. length of tube with a shaped spear point end for fitting into brick courses.



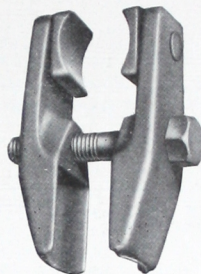
REVEAL PIN.

A screw-jack fitting used in a reveal tube to form a fixing for reveal tie.



SQUARE FINIAL COUPLER.

For joining two tubes in the same plane and at right angles. Used where load is required directly over the standard as in stand construction, also for barrier rails, etc.



SWIVEL FINIAL COUPLER.

As the previous fitting for joining two tubes in the same plane but at any desired angle.



CASTOR WHEELS.

Used on mobile scaffolds and having either cast-iron or rubber tyred wheels, with a stem to fit inside a standard. Can be fitted with locking device.



COMBINED SWINGOVER SPANNER AND PODGER.

A special spanner for tightening both hexagon headed bolts and eye bolts.

For formal definition of all component parts of a Scaffold, reference should be made to B.S.S. 1139-1951

TABLES OF WEIGHTS, LOADS AND QUANTITIES

WEIGHT OF TUBE.	
Scaffold tube to BS. 1139 is 1 1/8" outside diameter	
Steel Tube is 8 SWG.	Alloy Tube is 7 SWG.
Weight 2.988 lbs. per foot.	Weight 1.125 lbs. per foot.
10'— 0.26 cwt.	10'— 0.1 cwt.
50'— 1.3 "	50'— 0.5 "
100'— 2.6 "	100'— 1.0 "
500'— 13.3 "	500'— 5.0 "
1,000'— 26.7 "	1,000'— 10.0 "
5,000'— 133.4 "	5,000'— 50.2 "
10,000'— 266.7 "	10,000'— 100.4 "

APPROXIMATE MATERIAL PER 1,000 CU. FT. OF BIRDCAGE SCAFFOLDING.								
DESCRIPTION.	SPACING OF STANDARDS EACH WAY.							
	7'		8'		9'		10'	
	Tube	Cplrs	Tube	Cplrs	Tube	Cplrs	Tube	Cplrs
INTERNAL BIRDCAGE PROVISION FOR WORK- ING LIFTS AT TOP & ALL SIDES OF EACH LIFT. LEDGERS AT SAME INTERVALS AS STNDS. BASED ON BIRDCAGE OF 200,000 CU. FT.	87'	13	81'	12	75'	11	70'	10
AS ABOVE BUT BASED ON 30,000 CU. FT.	109'	19	96'	16	90'	15	86'	14
HOIST TOWER, APPROXIMATE QUANTITIES PER 10' RISE 6' 0" LIFTS, BRACED FOUR SIDES.	143'	20	153'	20	163'	20	177'	23

APPROXIMATE MATERIALS FOR 100 SQ. FT. OF SCAFFOLDING.								
DESCRIPTION.	SPACING OF STANDARDS.							
	6'		7'		8'		9'	
	Tube	Cplrs	Tube	Cplrs	Tube	Cplrs	Tube	Cplrs
BRICKLAYERS' PUTLOG SCAFFOLD 4' 9" LIFTS. HANDRAILS ALL LIFTS. BRIDLES ALTERNATE LIFTS.	66'	16	64'	15	62'	15	60'	14
SPEARPOINT PUTLOGS NO.	7		7		7		7	
PUTLOG SCAFFOLD 6' 0" LIFTS. HANDRAILS ALL LIFTS. BRIDLES ALTERNATE LIFTS.	57'	13	55'	12	53'	12	51'	11
SPEARPOINT PUTLOGS NO.	5		5		5		5	
INDEPENDENT SCAFFOLD 6' 0" LIFTS. HANDRAILS ALL LIFTS. BRACING BETWEEN EACH LIFT AT ALTER- NATE STANDARDS.	127'	23	121'	22	117'	21	110'	19

LOADS ON STEEL TUBE.			
The following figures for working loads apply to tubes to BSS. 1139			
BEAMS.		STANDARDS.	
Bending stress 7 tons/sq. in., Evenly distributed load on a beam $BM = \frac{WL}{8}$		Stress 6.5 tons/sq. in., $\frac{1}{r} = 0$, Axial loading.	
Span.	Load.	Effective Length.	Load.
1'	33.1 cwt.	1'	5.16 ton
2'	16.5 "	2'	4.66 "
3'	11.0 "	3'	4.05 "
4'	8.3 "	4'	3.52 "
5'	6.6 "	5'	3.02 "
6'	5.5 "	6'	2.55 "
7'	4.7 "	7'	2.11 "
8'	4.1 "	8'	1.73 "
9'	3.6 "	9'	1.43 "
LOADS ON SCAFFOLD BOARDS.			
Working stress for non-graded timber 800 lbs. sq. in. Evenly distributed load $BM = \frac{WL}{8}$		Span.	Load.
		1'	1,800 lbs.
		2'	900 "
		3'	600 "
		4'	450 "
		5'	360 "
		6'	300 "
		7'	257 "
		8'	225 "

METHODS OF

Competent person before each occasion put into use.

Erection, alteration and dismantling immediate supervision of person.

Competent and be employed—for erection, additions and Every part to displacement.

Every scaffold to the building under constructed as

Scaffolds to be suspended, and necessary.

Parts of building support scaffold sufficiently strong

Overhanging used as support designed as wall strength.

Bearers let into only supports strength, and fastened on the

Loose bricks or support any place and then only if

Drain pipes, unsuitable material support any scaffold

BRIEF SUMMARY OF SAFETY REGULATIONS

The following is a brief summary of the Building (Safety, Health and Welfare) Regulations, 1948 relating to scaffolding. (These are reproduced by kind permission of the Royal Society for the Prevention of Accidents, from their Building Regulations Handbook). The numbers refer to the regulations concerned. Users of scaffolding are strongly advised to acquaint themselves with the full Regulations.

METHODS OF ERECTION.

Competent person to inspect materials before each occasion on which they are put into use.

Erection, alterations, substantial additions and dismantling to be done under the immediate supervision of a competent person.

Competent and experienced workmen to be employed—so far as practicable—for erection, alterations, substantial additions and dismantling.

Every part to be so fixed as to prevent displacement.

Every scaffold to be rigidly connected with the building unless properly designed and constructed as an independent scaffold.

Scaffolds to be securely supported or suspended, and strutted or braced where necessary.

Parts of buildings not to be used to support scaffolds unless they are sufficiently strong and stable.

Overhanging eaves gutters not to be used as supports unless they have been designed as walkways and are of adequate strength.

Bearers let into walls not to be used as only supports unless they are of adequate strength, and pass through wall and are fastened on the other side.

Loose bricks or blocks not to be used to support any platform over 2 ft. high, and then only if they provide firm support.

Drain pipes, chimney pots or other unsuitable materials not to be used to support any scaffold whatsoever.

INSPECTION AND MAINTENANCE.

All scaffolds used must have been inspected by a competent person within the preceding 7 days unless no part has been erected for over 7 days.

Scaffolds also to be inspected after being exposed to weather conditions likely to affect strength or stability or to have displaced any part.

Results of inspections to be entered in or attached to the prescribed register (except for ladder scaffolds, trestle scaffolds and scaffolds from which persons cannot fall more than 6 ft. 6 ins.)

Each employer whose men use a scaffold must satisfy himself that it complies with the regulations, whether or not his own men have built it.

All scaffolds to be properly maintained.

Platforms, gangways, runs and stairs to be kept clear of unnecessary obstructions, material or rubbish and from projecting nails.

Slippery platforms, gangways, runs and stairs to be sanded, cleaned or otherwise remedied as soon as is practicable.

Scaffolds never to be overloaded. Material not to be kept on scaffolds unless needed within a reasonable time.

Movement of materials on or onto scaffolds to be done without causing any violent shock.

Partly dismantled scaffolds must either comply with the Regulations or else have prominent warning notices indicating that they must not be used.

MINIMUM WIDTHS OF WORKING PLATFORMS.*

Type of scaffold.	Minimum width
On outside of sloping roof	17 ins.
Platforms suspended from or supported by roof or by roof members and used only by painters for work of light nature.	17 ins.
Suspended scaffolds raised by winches.	25 ins.
Other suspended scaffolds as defined.	17 ins.
Ladder and trestle scaffolds used only for light work.	17 ins.
Temporary platforms passing between two adjacent glazing bars of a sloping roof and used only for work in vicinity of such bars.	17 ins., if space does not permit 25 ins.

OTHER SCAFFOLDS:—

When used only for a footing.	25 ins.
When used for deposit of materials as well as for footing.	34 ins.
When used for support of another platform (except the upper tier of a trestle scaffold.)	42 ins.
When used for the dressing or rough shaping of stone.	51 ins.
When used to support another platform and for dressing or rough shaping stone.	59 ins.

*Applicable only when persons are liable to fall more than 6 ft. 6 ins.

BRIEF SUMMARY OF SAFETY REGULATIONS (continued)

SUSPENDED SCAFFOLDS RAISED OTHERWISE THAN BY WINCHES.

Platforms to be suspended by rope or chains not more than 10 ft. 6 ins. apart, maintained in tension and properly secured. (Except for certain scaffolds securely suspended from fixed anchorages, with platforms over 25 ins. wide supported on metal bearers properly and securely connected to raising and lowering tackle, being wire rope or chain tackle such as automatically sustains the load). 17c

Platform to be at least 17 ins. wide and to conform to general requirements for all working platforms set out previously. 17c

BOATSWAIN'S CHAIRS, SKIPS, BUCKETS, BASKETS AND SIMILAR APPLIANCES.

Not to be used instead of suspended scaffolds unless work is of such duration as to make the use of a suspended scaffold unreasonable or the use of a suspended scaffold impracticable. 18·1

To be used only under supervision of a responsible person. 18·1

To be of good construction, sound material and free from patent defects. (This includes the suspension ropes or chains and their means of support). 18·2a

Ropes or chains to be securely attached. 18·2a

Measures to be taken to prevent spinning or tipping and to prevent the fall of the occupant. 18·2b

Skips, buckets and baskets to be at least 2 ft. 6 ins. deep, constructed of or reinforced by metal. 18·3

PUTLOGS.

Distance between putlogs to be fixed with due regard to the nature of the platform and the load it will bear. The distances given below are the maximum allowed as a general rule, but these must be reduced whenever the anticipated load or the nature of the platform makes a smaller distance necessary for safety. 10·6

Thickness of plank: 1½ in. 1½ ins. 2 ins.
Maximum distance: 3 ft. 3 ins. 5 ft. 8 ft. 6 ins.

GANGWAYS AND RUNS.

No gangways to be used for passage of materials unless at least 25 ins. wide and providing free passage without removal of any guard-rails and toe-boards. 26·2

WORKING PLATFORMS AND STAGES.

Boards over 2 ins. thick to be at least 6 ins. wide: all others to be at least 8 ins. wide. 23·1

*To have guard-rails to a height of at least 3 ft. above platform and any raised part of it (Except on certain special types of scaffold shown in the table below.) 24·1

*To have toe boards high enough to prevent fall of persons, tools and materials, with a minimum height of 8 ins., except where the nature of the work makes it impracticable and on certain special types of scaffold shown in the table below. 24·1

*Space between toe boards and lowest guard rail not to exceed 27 ins. 24·2

*Guard rails and toe boards to be on inside of up-rights. 24·2

Space between platform and face of building to be as small as practicable. (If workmen sit on edge of platform, space may be 12 ins., but not more.) 25·1

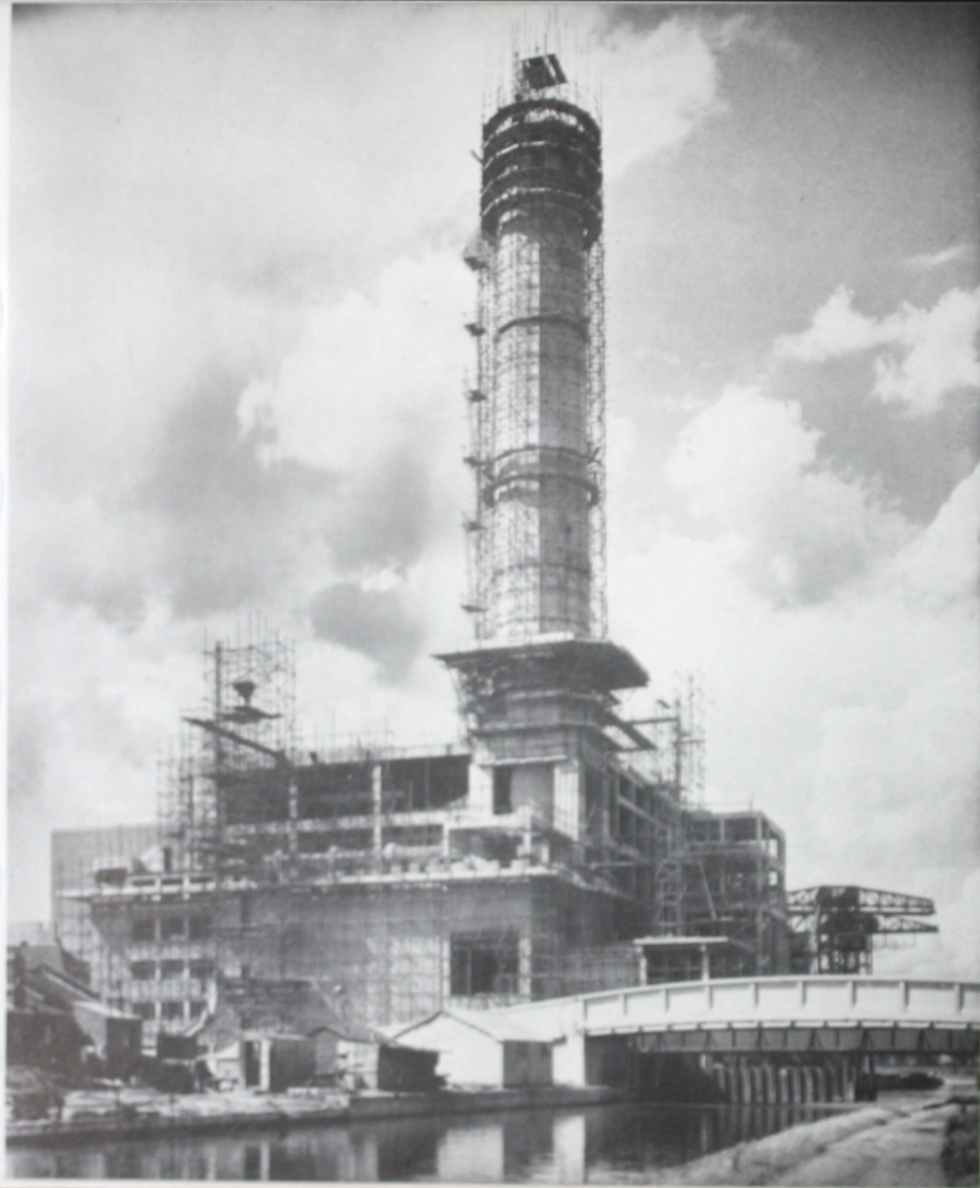
*** SCAFFOLDS HAVING SPECIAL REQUIREMENTS AS TO GUARD RAILS AND TOE BOARDS.**

TYPE.	GUARD RAILS.	TOE BOARDS.
Ladder scaffolds.	Not needed if secure handhold is provided all along platform.	Not required.
Trestle scaffolds.	Not required if platform rests on folding trestles or step-ladders.	Not required.
Suspended scaffolds where workers sit on the edge of platform.	Not required on side facing wall if ropes or chains are provided to give safe handhold.	
Other suspended scaffolds.	Required, but height on side facing wall may be reduced to 27 ins. if work is not otherwise possible.	Required as for all other platforms.
Platforms on the outside of sloping roofs.	Required. No definite height specified but rails must be suitable.	Not required unless necessary to prevent falls of tools or materials.
Temporary scaffolds used by steel-erectors.	Not required so long as the platform complies with Regulation 24 (5) (d).	
Temporary platforms passing between two adjacent glazing bars of a sloping roof.	Required unless glazing bars of roof framework provide secure handhold.	Required unless bars of roof framework provide handhold or the nature of the work makes toe boards impracticable.
Platforms supported by or suspended from roof members or roof and used only by painters for work of short duration near roof.	Required unless there is adequate handhold at every working position and material required for work can be used with safety in the absence of guard rails and toe boards.	

* Applicable only when persons are liable to fall more than 6 ft. 6 ins.

SCAFFOLDING FOR INDUSTRY

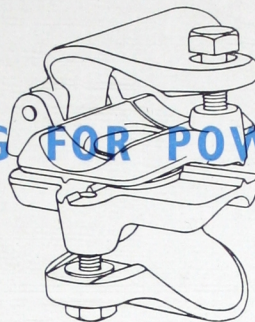
Power Station, Hackney, London	<i>Extensions.</i>	Pages	12—13
Film Studios, Elstree, Herts.	<i>New building.</i>	Pages	14—15
Factory Chimney, Motherwell.....	<i>Demolition work.</i>	Pages	16—17
Euston Railway Terminus, London	<i>Repair of masonry.</i>	Pages	18—19
Office Block, Kingsway, London.....	<i>External decoration.</i>	Page	20



**EXTENSIONS TO POWER STATION
HACKNEY, E.8**

*Erected by the contractors
J. L. Kier & Co. Ltd., S.W.1,
with S. & C. Scaffolding.*

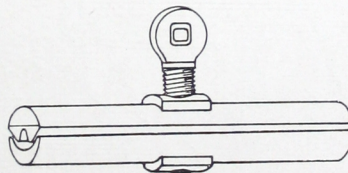
SCAFFOLDING FOR POWER STATION

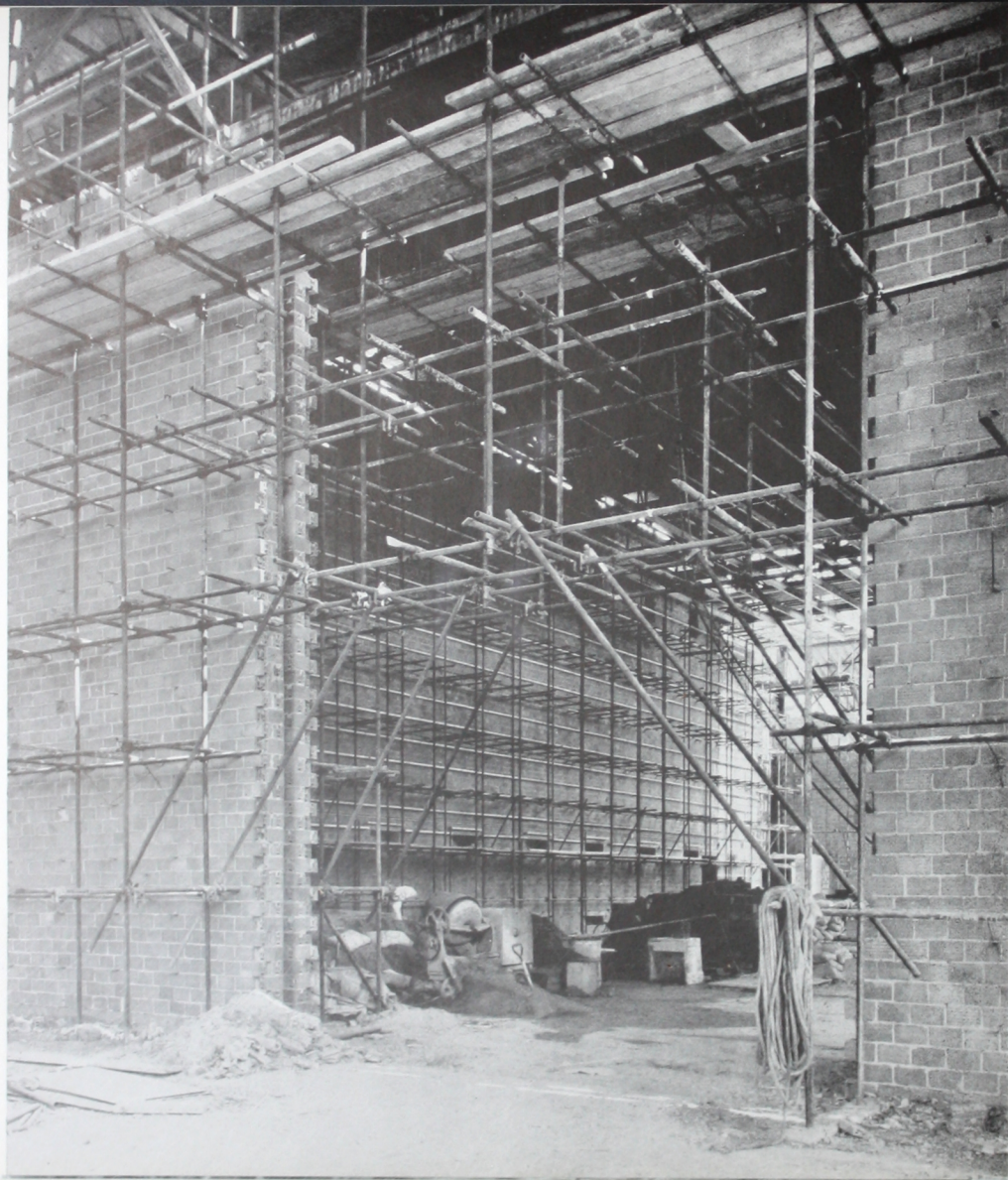


The illustration shows part of the new Hackney Power Station under construction for the British Electricity Authority.

The following points are worthy of note :—

- Finished height of reinforced concrete chimney 302 feet.
- Tubing required—166,000 feet with 50,000 fittings.
- The Ladder access on the exterior of the chimney scaffold.
- Five working lifts of scaffolding at top of chimney shaft.

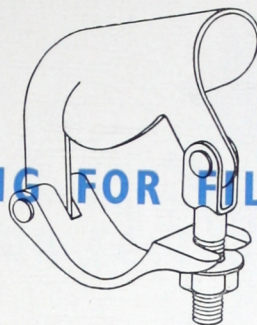




FILM STUDIOS, ELSTREE

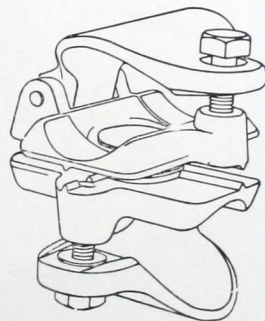
*Erected by S. & C. for
Robert Davidson, London, S.W.16.*

SCAFFOLDING FOR FILM STUDIOS



Work in progress on new film studios at Elstree for Associated British Cinemas Limited. The buildings, comprising three studios with office and administration block, were steel framed with brick external and interior walls. In order to render the studios sound proof, special bricks containing multiple air-ducts were employed.

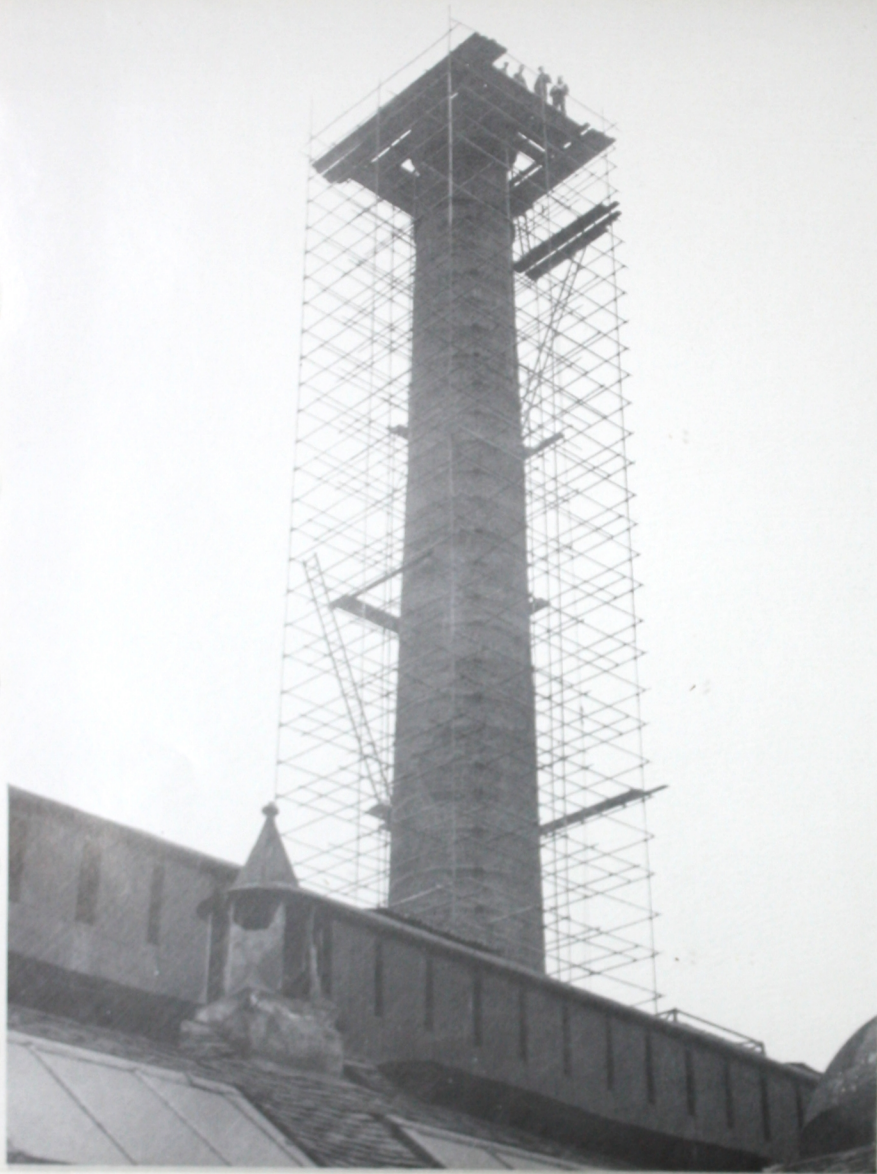
- Independent scaffolds are employed with braces to alternate lifts.
- Spear-pointed putlogs are here reversed as they do not enter the brick work; these fittings can thus serve a dual purpose.
- The large door opening is bridged to maintain unobstructed access during building operations.



HOUSING

CHURCHES
& SCHOOLSSPECIAL
OCCASIONSCRADLES
TOWERS, ETC.

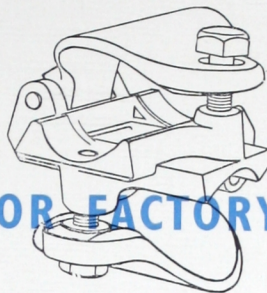
PLANT



DALZIEL STEEL WORKS,
MOTHERWELL, SCOTLAND

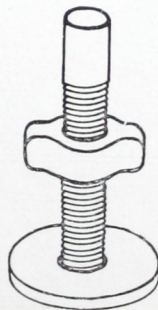
*Erected by S. & C. for the contractors,
Murdoch Mackenzie Limited, Motherwell.*

SCAFFOLDING FOR FACTORY CHIMNEY SHAFT



This typical chimney scaffold was erected at the Dalziel Steel works, Motherwell, Scotland.

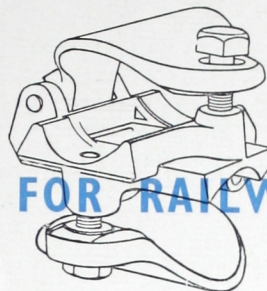
- Height of shaft—150 feet.
- Diameter of shaft—15 feet.
- Tubing used —9,400 feet.





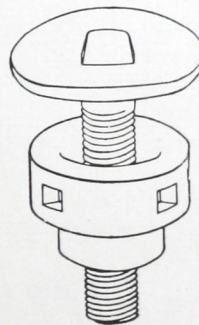
EUSTON STATION
Erected by S. & C. for
The Railway Executive, London

SCAFFOLDING FOR RAILWAY TERMINUS



The doric portal to Euston Station was built in the 1830's by Philip Hardwick in a style of magnificence rivalling ancient Greece. No doubt intended to honour the great achievement of bringing the first railway terminal to London, but the passengers must have felt something of a sense of anti-climax when they then approached the platforms.

- Independent scaffold with cantilever or trussed scaffolding to ends of pediment to effect repairs to and cleaning the overhanging cornice.
- The columns are 45 ft. high.
- Working platform has toe boards and handrail.
- Entry for traffic maintained by bridging (note supporting rakers taken from 4th lift).
- Alloy tube was used to avoid staining the stonework.



EUSTON STATION

Erected by S. & C. for
The Railway Executive, London, N.W.1.

HOUSING

CHURCHES
& SCHOOLSSPECIAL
OCCASIONSCRADLES
TOWERS, ETC.

PLANT

SCAFFOLDING FOR OFFICE BLOCK



A notable building in Kingsway, London is here shown clothed in alloy scaffolding in preparation for cleaning and repainting.

- An independent scaffold tied to the building by use of reveal screws and ties to the window openings.
- There is liberal use of diagonal bracing for stability.
- Handrails are supplied to all lifts.
- Alloy tubing is used to give cleanest possible working conditions, with minimum 'making good' on dismantling.

KINGSWAY, LONDON, W.C.
*Erected by S. & C. for the
 London County Council.*

SCAFFOLDING FOR HOUSING

Block of flats, Lambeth, London.....	<i>New building.</i>	Pages	22—23
Council houses, Boxmoor, Herts.....	<i>New building.</i>	Pages	24—25
Tenement flats, North Road, London.....	<i>External re-decoration and cleaning.</i>	Pages	26—27
Reinforced concrete flats, Clapham, London	<i>New building.</i>	Page	28

HOUSING

CHURCHES
& SCHOOLSSPECIAL
OCCASIONSCRADLES
TOWERS, ETC.

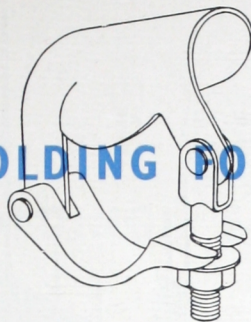
PLANT



The block of f
being part of

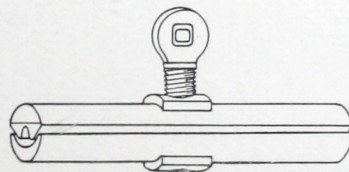
FLATS, LAMBETH
*Erected by the Contractors,
Clarke, Barton & Co. Ltd.,
Belmont, Surrey,
with S. & C. Scaffolding.*

SCAFFOLDING FOR FLATS



The block of flats illustrated is under construction for the Lambeth Borough Council at Brixton Hill, being part of the extensive post-war scheme for re-housing in London:—

- A putlog scaffold is employed being most suitable for new brick walls and economic in use.
- The scaffold rises “lift” by “lift” as the work proceeds.
- At window openings use is made of bridles for supporting the putlogs.
- A hoist to carry up materials is essential for this type of work; they range from 5 to 50 cwt. capacity and are powered by electric, petrol or diesel units.



FLATS, LAMBETH

*Erected by the Contractors,
Clarke, Barton & Co. Ltd.,
Belmont, Surrey,
with S. & C. Scaffolding.*



SPECIAL
CHURCHES
& SCHOOLS

SPECIAL
OCCASIONS

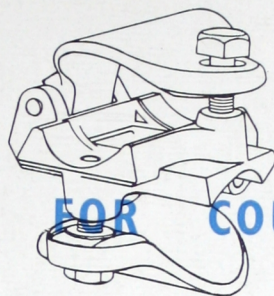
CRADLES
TOWERS, ETC.

PLANT



COUNCIL HOUSES, BOXHED
Erected by the Contractors, J. & J.
Chesham, Bucks.
with S. & C. Scaffolding.

SCAFFOLDING FOR COUNCIL HOUSES



Houses in blocks of four being erected on the Beechfield Estate, Boxmoor, Herts.:—

- An exterior putlog scaffold erected by the contractor as the work proceeds.
- When not working "overhand," internal backing scaffolds are required.
- The working platform accommodates four boards, each 9 in. wide, which is accepted as the most convenient for working combined with storage of materials.

CHURCHES
& SCHOOLS

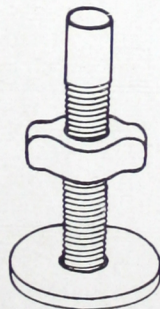
SPECIAL
OCCASIONS

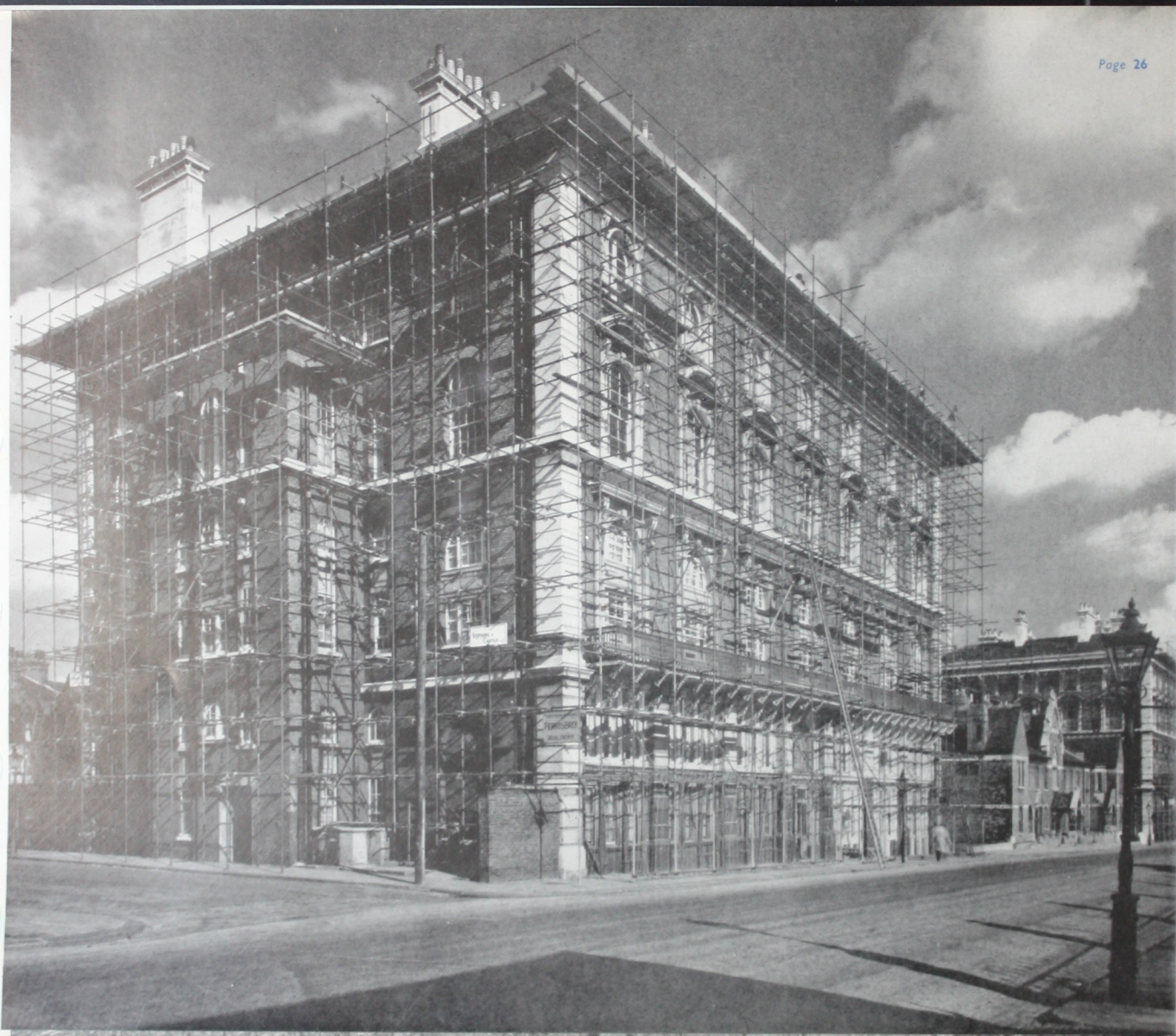
CRADLES
TOWERS, ETC.

PLANT

COUNCIL HOUSES, BOXMOOR

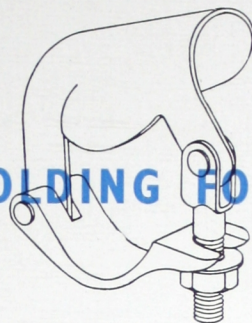
*Erected by the Contractors, Jesse Mead Ltd.,
Chesham, Bucks.
with S. & C. Scaffolding.*





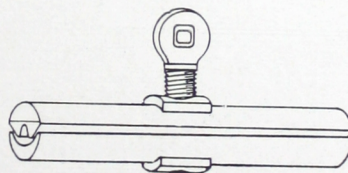
FLATS, CITY MANSIONS
Erected by S. & C. for
Ferris Brothers, London, W.3.

SCAFFOLDING FOR FLATS



Tenement blocks in North Road, Islington, London, are being repaired and redecorated. The independent scaffolding has the following features:—

- Working platform at roof level is completely sheeted, and has toe boards throughout.
- Guard rail also provided.
- Work has commenced at eaves level, but as it moves down, the platforms and toe boards are also moved to the lower “lifts.”
- A jenny wheel hoist is provided on the roof for raising and lowering materials and rubbish.



FLATS, CITY MANSIONS
Erected by S. & C. for
Ferris Brothers, London, W.3.

CHURCHES
& SCHOOLS

SPECIAL
OCCASIONS

CRADLES
TOWERS, ETC.

PLANT

SCAFFOLDING FOR FLATS

The illustration shows one of a number of large blocks of flats in course of construction in Studley Road, Clapham for the Lambeth Borough Council. These new blocks are a striking contrast to the older property shown in the left foreground. The frameworks are of reinforced concrete and the fillings are of brick. Some of the blocks rise to ten stories.

- Independent scaffolding is erected for forming the framework and floors.
- Putlog scaffolding, being more convenient, is substituted for the completion of the brickwork.

FLATS, STUDLEY ROAD
*Erected by the Contractors,
J. Jarvis & Sons Ltd., London, S.W.1
with S. & C. Scaffolding.*

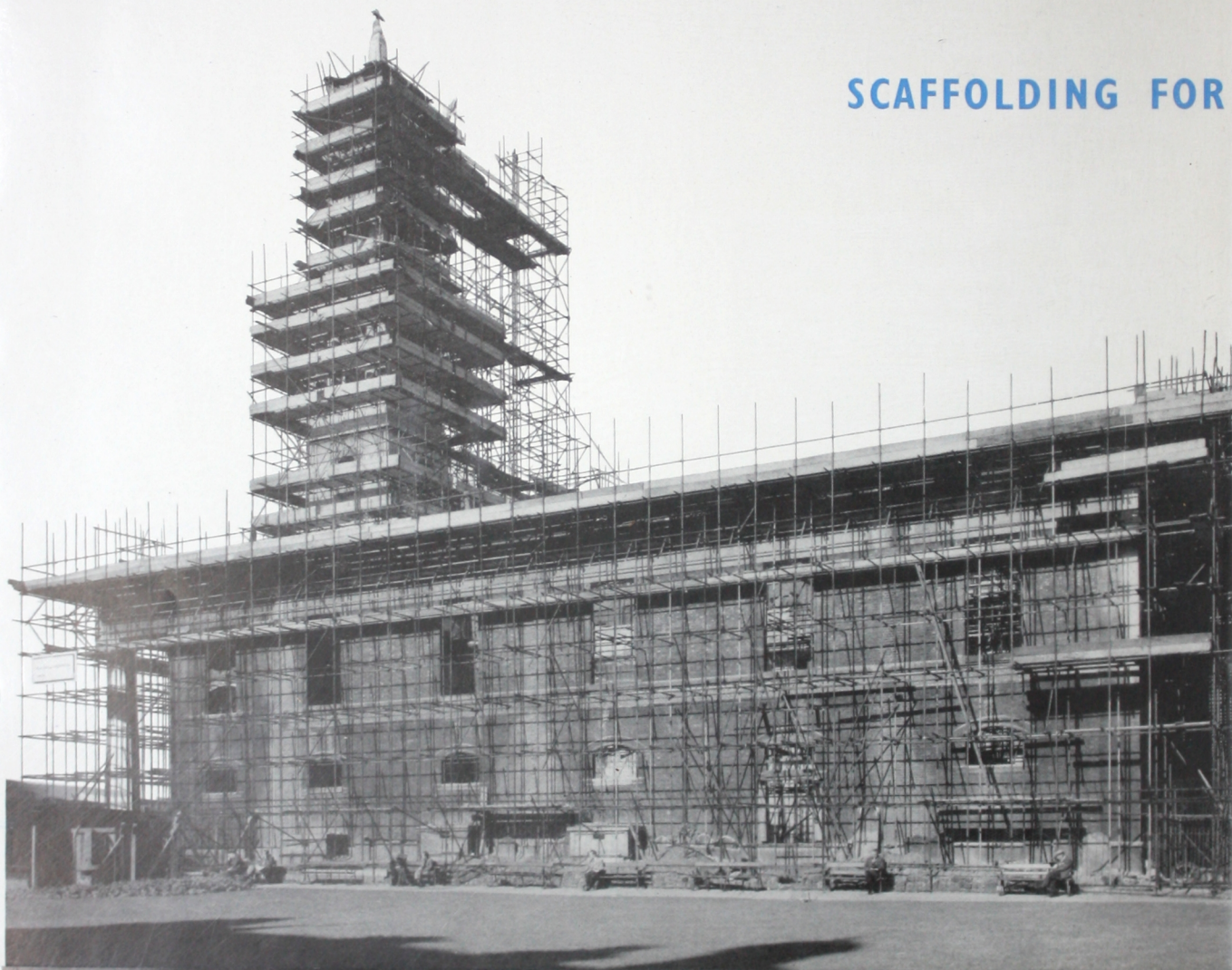


SCAFFOLDING FOR CHURCHES & SCHOOLS

St. John's, Waterloo Road, London	<i>Rebuilding.</i>	Pages	30—31
St. Stephen's, West Ealing	<i>Internal decoration and cleaning.</i>	Pages	32—33
All Soul's, Langham Place, London	<i>Rebuilding spire.</i>	Page	34
St. Stephen's, Westbourne Park, London	<i>Alterations to spire.</i>	Page	35
Hatfield Technical College, Herts.	<i>New building.</i>	Pages	36—37
Polytechnic, Regent Street, London	<i>Repairs to masonry.</i>	Page	38

SCAFFOLDING FOR

CHURCH



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ST. JOHN'S CHURCH

Erected by the Contractors, H
Greenwood Ltd., London, S.W.
with S. & C. Scaffolding.

FOR CHURCH RESTORATION

St. John's Church, Waterloo Road, London is known as one of the "Waterloo" churches. It was built by Francis Bedford in 1822-4 for the Commissioners under the Church Building Act, 1818, who were authorised to spend up to one million pounds on new churches. The motive for this Act was not so much thanksgiving for the victory of Waterloo (1815) but a measure of social expediency to combat the terrors of the rising tide of democracy in this country.

In the last war St. John's suffered a direct hit from a high explosive bomb, which ripped off the roof and laid waste the interior. However, 150 people sheltering in the crypt were unharmed. The building was restored and used as the "Festival" Church for the 1951 Festival of Britain. In this picture the structure is shown clothed in an independent scaffold:—

- Large hoist tower running to top of the steeple.
- Double guard board to working lifts.

ST. JOHN'S CHURCH

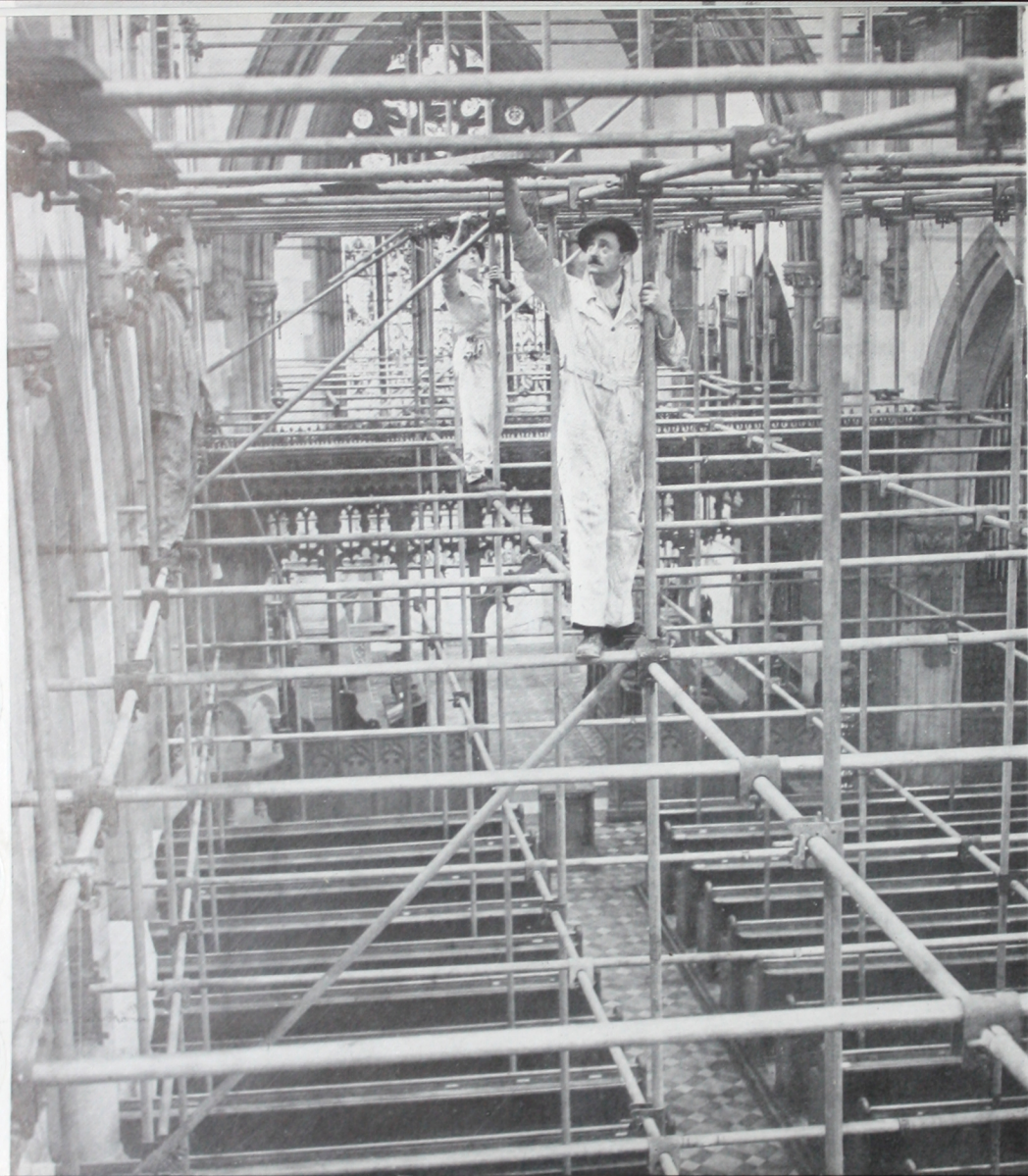
Erected by the Contractors, Holliday & Greenwood Ltd., London, S.W.1, with S. & C. Scaffolding.



SPECIAL
OCCASIONS

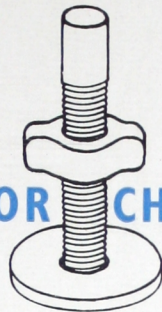
CRADLES
TOWERS, ETC.

PLANT



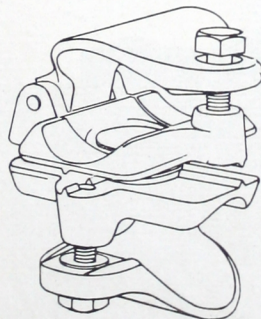
ST. STEPHEN'S CHURCH, WEST EALING
*Erected by S. & C. for
G. Holland & Sons, London, W.13.*

SCAFFOLDING FOR CHURCH INTERIOR



The interior of St. Stephen's Church, West Ealing, required cleaning and redecorating, and for this purpose a birdcage scaffold has been erected:—

- The standards and transoms have been arranged to give the minimum interference so as to enable services to be held.
- Alloy tubing was used throughout for its good appearance and cleanliness.
- The scaffold was erected the full width of the nave so as to provide working platforms for the side walls.



SCAFFOLDING FOR

CHURCH S

All Soul's Church, Langham Place, is a famous London landmark built by John Nash in 1822-4. It completes the vista up the "Via Triumphalis"—the Royal Road running from Carlton House, up Regent Street, and thence down Portland Place to Regent's Park. This beautiful church with its circular portico of Corinthian columns is a most satisfying solution to the architectural problem of how to make interesting the point at which the direction of a road changes.

The building was seriously bomb damaged during the War, at the same time as the nearby Queen's Hall was completely destroyed. The top 50 feet of the delicate fluted spire with seventeen sides had to be replaced when the building was restored in 1952. In the picture, the scaffolding from the roof of the portico to the top of the spire is shown:—

- Height of spire —150 ft.
- Height of hoist tower —100 ft.
- Tubing employed —24,000 ft.
- The large working platform served by the hoist was erected to carry masonry, and was considered a very economical way of scaffolding for the building of a church spire.

ALL SOUL'S, LANGHAM PLACE

Erected by S. & C. for
Ward & Paterson Ltd., London, W.1.

This illustration is of Westbourne Park, The Church was destroyed in the War and the top part of the pinnacles.

- Height of spire
- Height of hoist tower
- Tubing required
- Note the ladder (Regulation 29) which allows a minimum working platform

ST. ST.

FOR CHURCH SPIRES

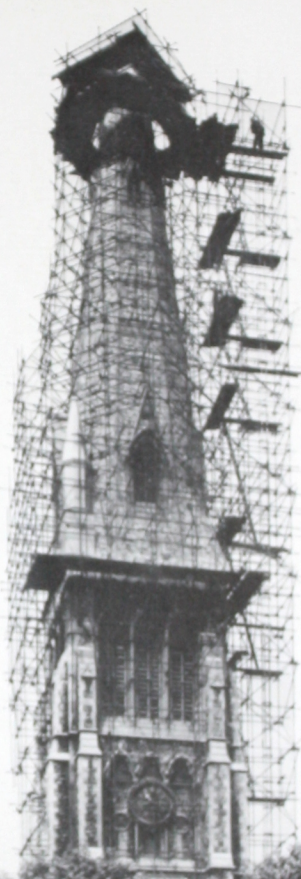
This illustration is of St. Stephen's Church, Westbourne Park, Paddington, London, W.2.

The Church was extensively damaged during the War and the top of the spire was subsequently demolished and the tower completed with four new pinnacles.

- Height of spire —160 ft.
- Height of hoist tower —180 ft.
- Tubing required —20,000 ft.
- Note the ladder access adjoining the hoist tower.
(Regulation 29 of Building Regulations stipulates a minimum rise of 3 ft. 6 in. above the working platform.)

ST. STEPHEN'S CHURCH, LONDON, W.2

*Erected by S. & C. for
Ward & Paterson Ltd., London, W.1*

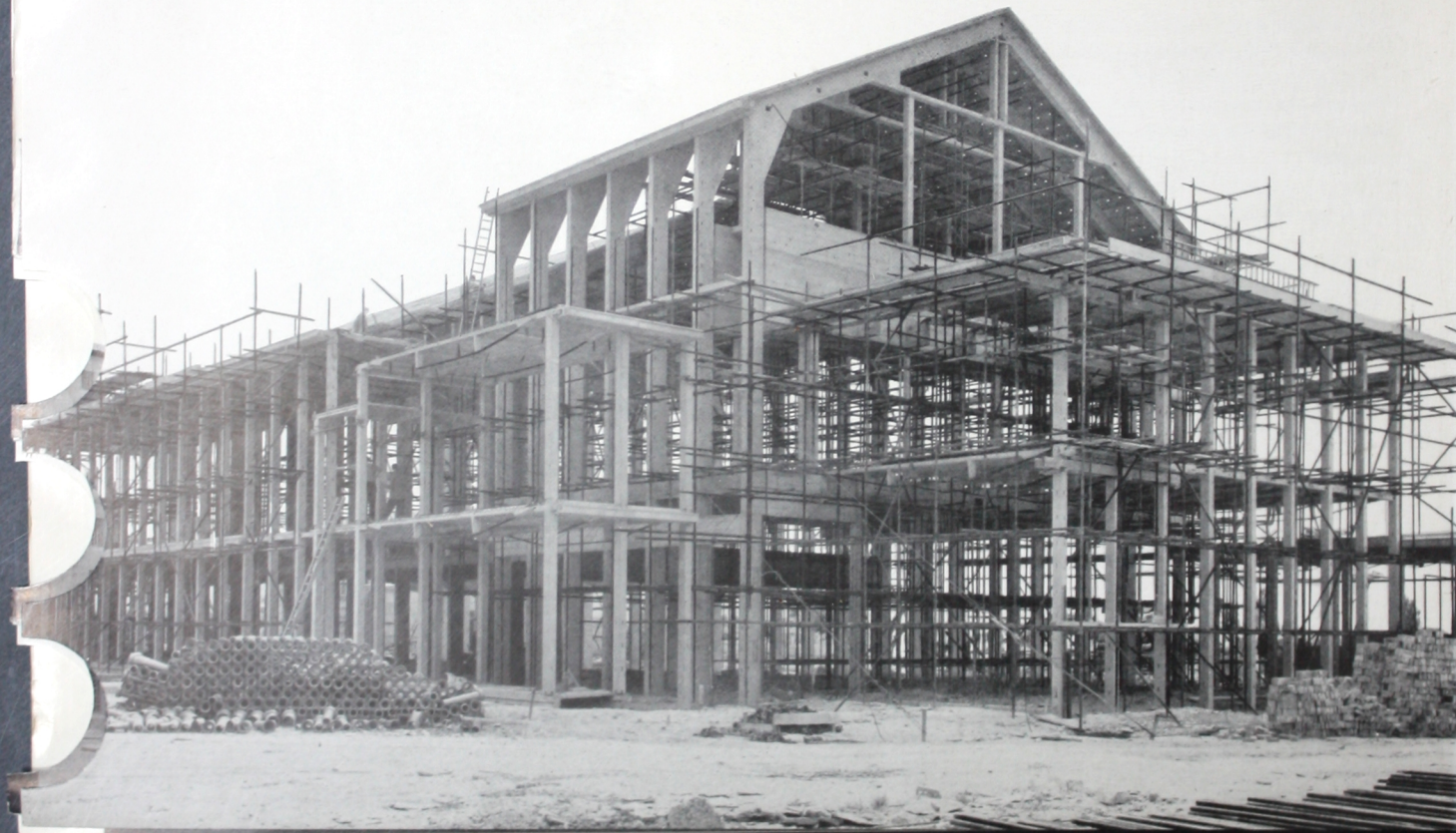


SPECIAL
OCCASIONS

CRADLES
TOWERS, ETC.

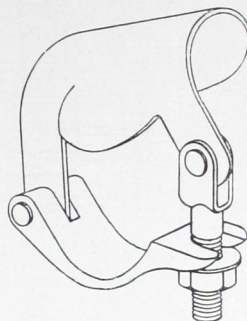
PLANT

SCAFFOLDING FOR TECHNICAL



HATFIELD COLLEGE, Herts.
Erected by S. & C. for
Gilbert-Ash Ltd., London.

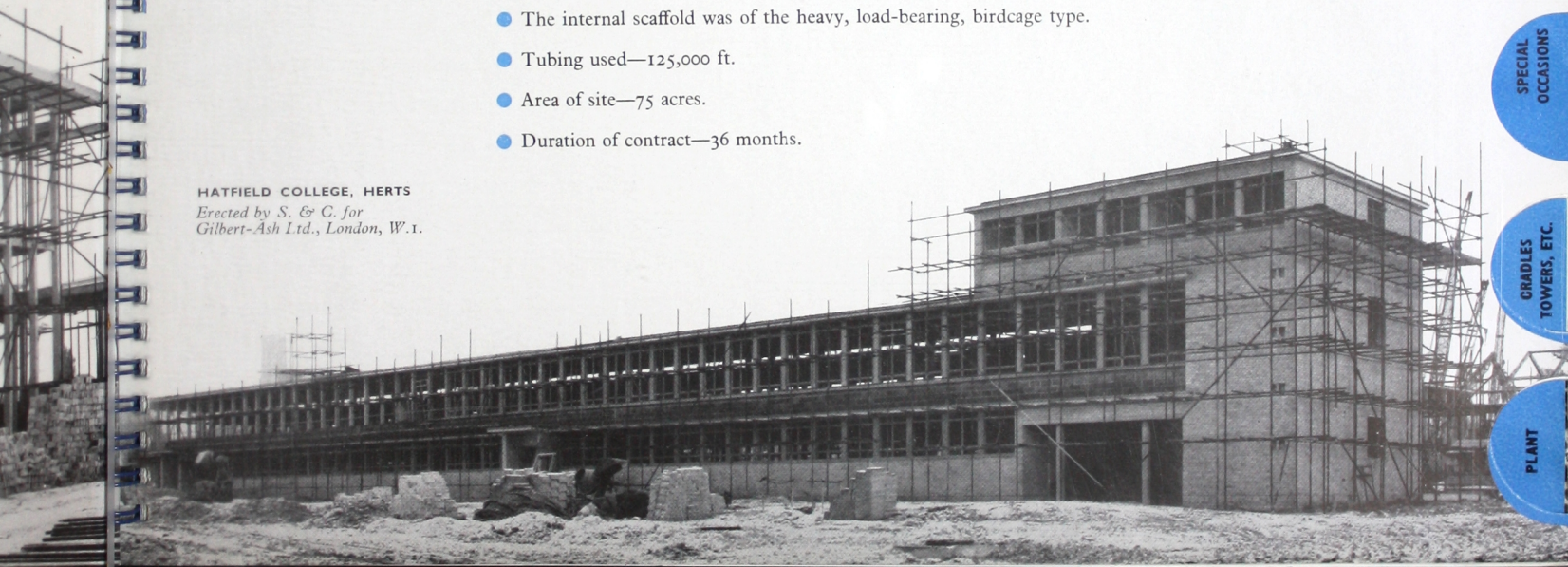
G FOR TECHNICAL COLLEGE



The Hatfield Technical College, in course of construction. There were 13 blocks of buildings in pre-cast concrete units. The scaffolding was erected in advance ready to support the concrete walls, floors and roof units when they were raised into position by crane. After the jointing of the various units was completed, the scaffolding was adjusted for use by the bricklayers and other trades, both internally and externally:—

- The internal scaffold was of the heavy, load-bearing, birdcage type.
- Tubing used—125,000 ft.
- Area of site—75 acres.
- Duration of contract—36 months.

HATFIELD COLLEGE, HERTS
*Erected by S. & C. for
 Gilbert-Ash Ltd., London, W.1.*



SPECIAL
OCCASIONS

CRADLES
TOWERS, ETC.

PLANT

SCAFFOLDING FOR THE POLYTECHNIC

The Polytechnic, Regent Street, has since 1882 been the well-known home of Quintin Hogg's great educational movement. Previously the Royal Polytechnic Institute was there—a scientific museum and exhibition providing “a judicious, but unlucrative mixture of instruction and amusement.” In 1911 the plain, three-storied structure with its unimpressive Georgian frontage was replaced by the present five-storied building with its dignified pillared exterior. For repairing this frontage a mason's heavy, independent scaffold was required:—

- Gantry of double 3 in. standards for heavy materials (2 in. tubes suffice for lighter work).
- Pavements were unobstructed, the gantry loading bay with overhead runway being provided for unloading lorries.
- Cross-bracing was employed at every lift and every fourth bay for extra strength.

THE POLYTECHNIC
Erected by S. & C. for
Trollope & Colls Ltd., London, W.C.2.



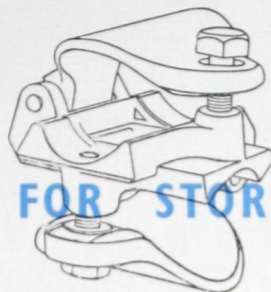
SCAFFOLDING FOR SPECIAL OCCASIONS

Selfridges, London	<i>Coronation decorations.</i>	Pages	40—41
Coronation Stand, Parliament Street, London	<i>Spectator's stand.</i>	Pages	42—43
Coronation Stand, Berkeley Hotel, London.....	<i>Spectator's stand.</i>	Pages	44—45
Sculptor's Model		Page	46



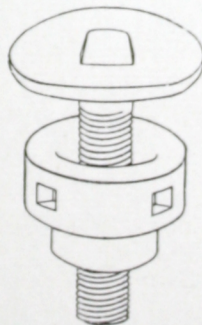
SELFRIDGES LTD.
Erected by S. & C. for
Selfridges Display Dept.

SCAFFOLDING FOR STORE DECORATION



Selfridges of Oxford Street, London, in their decorative schemes for the front of their building, call for much ingenuity in the use of scaffolding. The Coronation decorations shown in this picture required scaffolding to support the pelmets, window boxes, picture frames and painted panels. As regards the central feature, scaffolding had first to be erected to enable the large clock to be removed, and then to support the great model of Her Majesty The Queen, mounted on her horse "Winston."

- Working scaffolds were provided to enable plasterers and painters to work on the decorative features. This was supported and projected approximately 10 ft. from the face of the building, by cantilevering from windows and enclosures.
- The pelmets were supported by tubes held in position by reveal ties.
- The window boxes were supported on short tubes stepped up to form tiers.



SELFRIDGES LTD.

Erected by S. & C. for
Selfridges Display Dept.

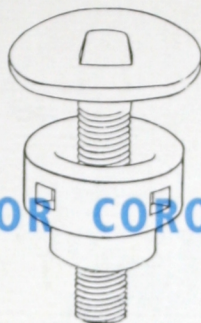
GRADLES
TOWERS, ETC.

PLANT



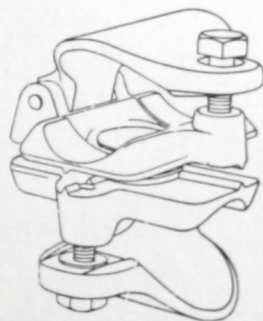
PARLIAMENT STREET STATION
Erected by S. & C. for
John Garlick (1910) Ltd.,
London, S.W.3.

SCAFFOLDING FOR CORONATION STANDS



Stands such as the one illustrated for Her Majesty, Queen Elizabeth II's Coronation calls for the use of hundreds of miles of scaffold tube. The example illustrated, erected in Parliament Street, S.W.1, is typical of the multi-tiered variety:—

- As is usual with structures designed for use by the public, the stands were subject to special regulations enforced by the Authorities to ensure adequate strength to support a "live load."
- The ledgers were made up in the form of lattice beams about 2 ft. deep.
- The front standards were erected from pavement level and additional support was obtained by standards from the basement level, some 12 ft. below.



PARLIAMENT STREET STAND

*Erected by S. & C. for
John Garlick (1910) Ltd.,
London, S.W.3.*



Processional stands call for much skill in the use of scaffolding. For instance, in a busy street the width of the scaffold had to be confined in order that pavement obstruction was kept to a minimum. This is true of the Berkeley Hotel here illustrated.

BERKELEY HOTEL

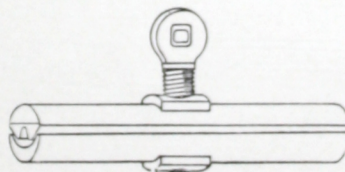
*Erected by S. & C. for
Beaufort Construction Ltd.,
London, S.E.1.*

SCAFFOLDING FOR HOTEL STAND



The stand shown here is in course of erection on the Piccadilly frontage of the Berkeley Hotel, London, for the Coronation 1953.

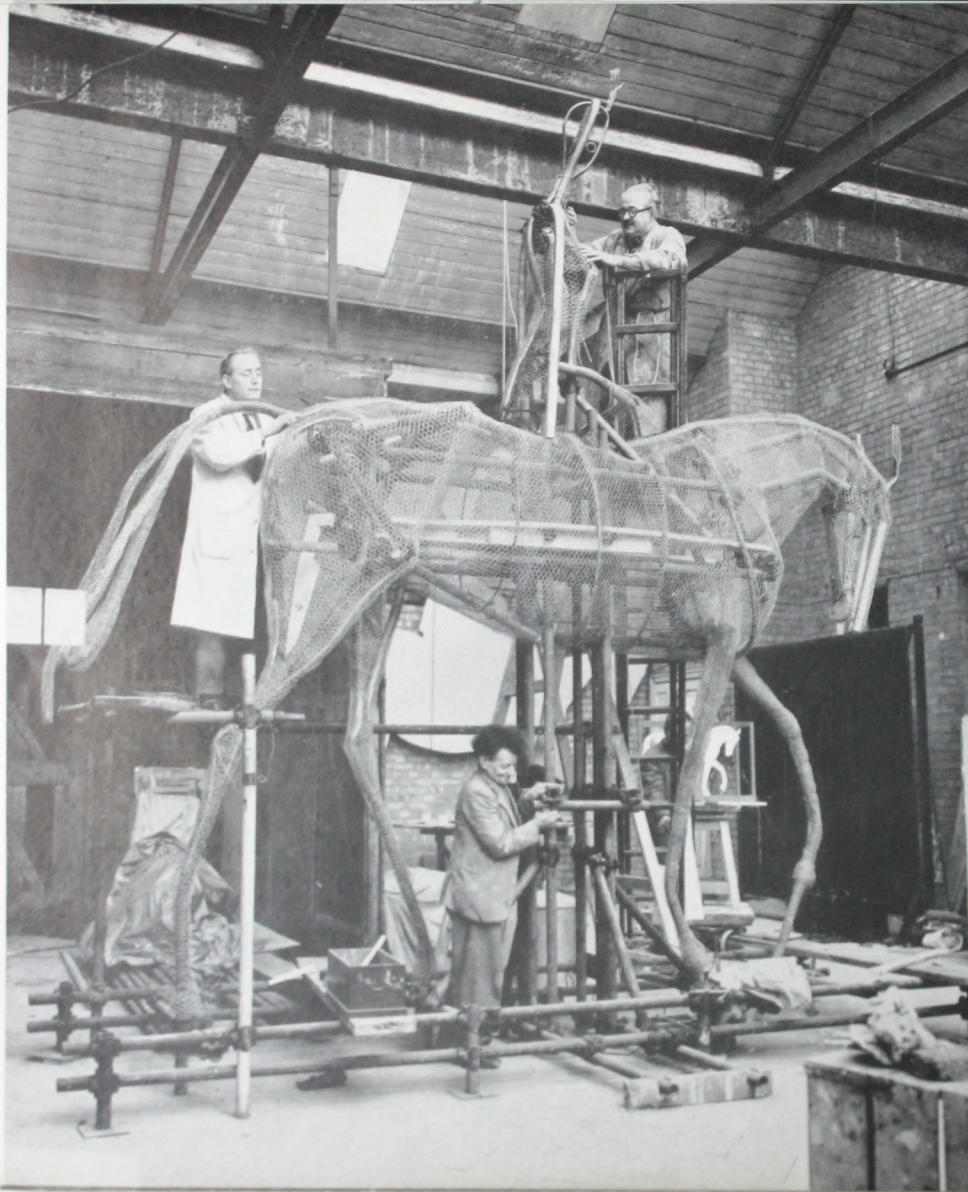
- The outer standards are supported by the pavement, and the inner ones by steel packings secured in the area.
- The lattice beams to meet the Authorities' requirements were made up to suit the various spans, which varied from 6 ft. to 30 ft.
- The hotel doors have been kept clear of scaffolding.



SCAFFOLDING FOR SCULPTURE

The equestrian statue of Her Majesty, the Queen, (one and a half times life size), shown by Selfridges for the Coronation, was built up on a framework of steel scaffolding. As shown in the picture in the sculptor's studio, the work began by forming a rough outline of the horse and rider in tubing covered with wire-netting, on which clay was modelled. This was supported by a tubular raft and tower.

After the casts were made they were re-assembled on a similar tubular framework, arranged so that the finished statue could be broken down into six sections. These were re-assembled on the site, the fittings being secured through trap-doors in the body of the horse.



CRADLES, BOSUNS' CHAIRS AND TOWERS

Works, Acton, London	<i>Cradles.</i>	Page 48
Residential Property, Gloucester Road, London.....	<i>Cradles.</i>	Page 49
Diagram	<i>Cradles.</i>	Page 50
Bosun's chair		Page 51
Tubular Towers		Page 52



CRADLES

The Chesebrough Manufacturing Company's works at residential property in Road, S.W., are shown fixed and travelling cradles for redecorations to be

Further details of stationary equipment will be found

Cradle equipment can be used for use in conjunction with permanent fixed tracks for cleaning and maintaining large buildings, schools

(left)
CRADLES AT CHESEBROUGH CO. LTD.

Erected by S. & C. for James Webb & Sons (Bldrs.), London, E.C.1.

CRADLES AT GLOUCESTER

Erected by S. & C. for James Webb & Sons (Bldrs.), London, E.C.1.

CRADLES

The Chesebrough Manufacturing Company's works at Acton and a residential property in Gloucester Road, S.W., are shown with both fixed and travelling cradles rigged for redecorations to be carried out.

Further details of standard cradle equipment will be found on page 50.

Cradle equipment can be supplied for use in conjunction with a permanent fixed track for window cleaning and maintenance work on large buildings, schools, etc.

(Left)
CRADLES AT CHESEBROUGH MFG.
CO. LTD.

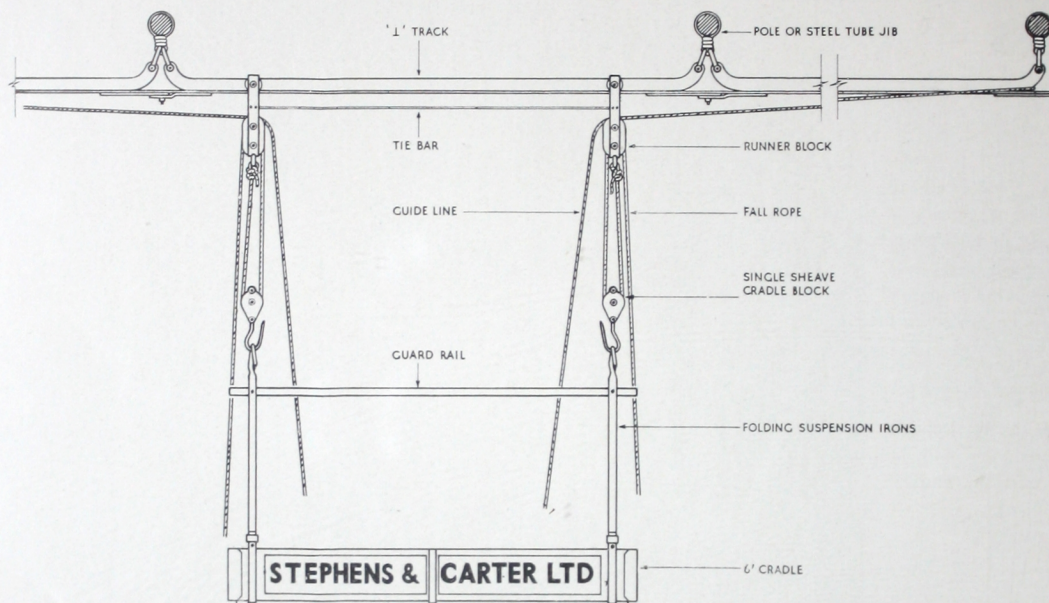
*Erected by S. & C. for
James Webb & Sons (Bldrs.) Ltd.,
London, E.C.1.*

(Right)
CRADLES AT GLOUCESTER ROAD,
S.W.7

*Erected by S. & C. for
James Webb & Sons (Bldrs.) Ltd.,
London, E.C.1.*



TYPICAL TRAVELLING CRADLE ARRANGEMENT



The two types of operation are:—

(A) **Fixed:** these move up and down only.

(B) **Travelling:** these can be moved in either direction along the face of the building, as well as up and down.

A special steel track slung from outriggers, carries the runner blocks. The track can also be erected on a curved frontage to give a continuous run.

- The size of cradle depends on the nature of the work, but the standard size is 6 ft. long.

- Suspension is by manilla fall ropes, through special pulley blocks.

- Cradles being a form of suspended scaffold must have guard rails and toe boards, in accordance with the Building Regulations.

BOSUN
CHAIR

Where conditions do not permit the use of scaffolding, Bosun's Chair slung above the work may be used. Repairs to soil and rainwater pipes, painting flag staffs, etc., are examples of work suitable for this equipment.

- Suspension is by manilla and pulley blocks.

- The framework must be of metal.

- A safety chain must be provided.

BOSUN'S CHAIR

Where conditions do not warrant the use of scaffolding or cradles, a Bosun's Chair slung from a point above the work may be used. Repairs to soil and rainwater pipes, painting flag staffs, or for access to boilers, are examples of work suitable for this equipment.

- Suspension is by manilla ropes and pulley blocks.
- The framework of the Chairs must be of metal.
- A safety chain must be provided.



TUBULAR TOWERS

The Tower illustrated is a mobile type made up in alloy tube with scaffold fittings and castor wheels. Among the many uses of such equipment may be instanced—inspection of roofs, internal painting and electrical work.

- Guard rails must be provided to top platform.
- Wheels should have a locking device, or be otherwise prevented from moving while in use.
- The heights range from 15 ft. to 40 ft. to platform.
- The base area varies with the height to give stability.

*Quantities are for towers square on plan.
Guard rails included around four sides approx. 3 ft. above platform.
Bracing is included at each lift around four sides.*

Height to Platform	Platform size	Tube	Double Coup- lers	Swivel Coup- lers	Joint Pins	Castor Wheels
15'	8' x 8'	4/17', 8/10', 18/8'	36	16	—	4
18'	8' x 8'	4/20', 12/9', 22/8'	44	24	—	4
21'	8' x 8'	4/12', 4/11', 12/10', 22/8'	44	24	4	4
24'	9' x 9'	8/13', 16/11', 26/9'	52	32	4	4
27'	9' x 9'	4/15', 4/14', 16/11', 26/9'	52	32	4	4
30'	10' x 10'	8/16', 20/12', 30/10'	60	40	4	4
33'	10' x 10'	4/18', 4/17', 20/12', 30/10'	60	40	4	4
36'	11' x 11'	4/14', 32/12', 34/11'	68	48	8	4
39'	11' x 11'	12/14', 24/12', 36/11'	72	48	8	4
42'	12' x 12'	3/17', 8/15', 4/14', 24/13', 43/12', 8/8', 4/4'	105	64	8	4

* To increase the stability of these towers the base should be weighted.



BUILDERS' PLANT

Builders' ladders	Page 54
Extension ladders	Page 54
Builders' steps	Page 54
Painters' trestles.....	Page 54
Steel wheelbarrows	Page 54
Water barrows	Page 54
Concrete mixers.....	Page 54
Power barrows	Page 54



TRESTLES are essential equipment for decorating and light repairs. Bars are mortised and tenoned to stiles and wide enough to take a minimum of two 9 in. boards. Distance between bars is 18 ins. staggered in the two sections to give an alternate 9 ins. rise. Heights range from 6 to 20 ft.

The traditional **BUILDERS' LADDER** made with half-round pole sides and hardwood rungs. Frequent reinforcement with steel tie rods. Sizes range from 16 to 60 rungs (up to 40 feet).



BUILDERS' STEPS, perhaps the most heavily worked piece of equipment, must be constructed in the sturdiest fashion—treads housed to strings, and reinforced at intervals with steel tie rods, back hung on steel back-flaps. Sizes range from 5 to 16 treads (up to 12 feet).

EXTENSION LADDERS are available in both 2 and 3 parts to enable heights of up to 66 ft. to be reached. The sections are either hand or rope operated. Special light-weight Extension Ladders are also made for light duties such as painting, sign-writing and electrical work.



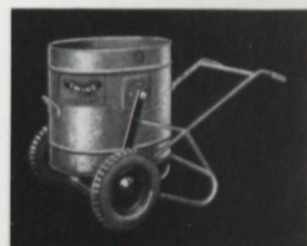
STEEL WHEELBARROWS—capacity 3 ft. cu. to 7 ft. cu., wheels steel or rubber tyred.



CONCRETE MIXERS. These range from small half bag size up to 10/7. Alternate Power Units.



POWER BARROWS—capacity 8 ft. cu. with skip or platform. 3 H.P. Power Unit.



WATER BARROWS—capacity 15 to 50 gallons. Wheels steel or rubber tyred.

STEPHENS & CARTER MAINTAIN EXTENSIVE STOCKS OF BUILDERS' EQUIPMENT Full details and leaflets on request





capacity 15 to
eel or rubber

on request



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